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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/682,310	10/08/2003	Mattias Karlsson	58282 (47137)	7321

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EXAMINER	
PRICE, CRAIG JAMES	
ART UNIT	**PAPER NUMBER**
3753	

MAIL DATE	DELIVERY MODE
12/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/682,310	KARLSSON ET AL.	
	Examiner	Art Unit	
	Craig Price	3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *28-31,33-38 and 40-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5,28-31,33-38 and 40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/31/2007 has been entered.

Drawings

2. See attached Draftsmen form PTO-948.

Oath/Declaration

3. It does not state that the person making the oath or declaration acknowledges the duty to disclose to the Office all information known to the person to be material to patentability as defined in 37 CFR 1.56. Rather the filed oath states that,

"I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56**(a)**. "

A new oath in accordance with 37 C.F.R. **1.56** is required.

Appropriate correction is required.

Claim Objections

4. Claim 50 is objected to because of the following informalities: No method step exists within the claim,(eg. there is no act of "applying" the tape), the claim is also written in narrative form. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 51 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 51 is dependent against cancelled claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claim 28 is rejected under 35 U.S.C. 102(b) as being anticipated by Call et al. (5,533,256).

Call et al. disclose a macroscale (10, the air flowing through the u-shaped channels) device, which is interfaced with a microscale (20) device using double-sided tape (42) to form a stable association between the microscale device and the macroscale device, wherein the double sided tape comprises a first adhesive surface which associates with the macroscale device and a second adhesive surface which associates with the microscale device, wherein the microscale device has at least one

microchannel (Col.5, Lns. 18 – 28, the connection of the chip to the motherboard is seen as the microchannel which carries electrons).

8. Claim 52 is rejected under 35 U.S.C. 102(e) as being anticipated by O'Connor et al. (6,536,477).

O'Connor et al. discloses a system comprising a pump head device (Col.7, Lns. 36 – 65, a syringe pump is placed into 40) which is interfaced with a microfluidic device using double-sided tape (22) to form a stable association between the microfluidic device and the pump head device, wherein the double sided tape comprises a first adhesive surface which associates (the association is read as joining together the devices) the with the pump head device and a second adhesive surface which associates with the microfluidic device, and wherein a pressure chamber (48) is between the pump head device and the microfluidic device as shown in figure 2A.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 28-31, 33, 36-43 and 48 - 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Connor et al. (6,536,477) in view of Call et al. '256.

O'Connor et al. disclose that a macroscale device (the pumping and valving mechanisms, Col.6, Lns. 39-42) which is interfaced with a microscale device at an interface using double-sided tape, and a macroscale device which is interfaced with a microscale device at an interface using transfer tape (Col.3, Lns. 60-67 , "double sided tape can be used to construct the devices", Col.4, Lns. 20 – 38, lines 32 – 35 "In such an embodiment, the device also can include a backing layer removably adhered to the lower surface of the second substrate", and in Col.6, Lns.39-42, the pumping device is considered as a macroscale device).

Regarding claim 30, O'Connor et al. disclose that the microscale device is a microfluidic device (Col.2, Lns. 3-5).

Regarding claims 31 and 39, O'Connor et al. disclose that the microscale device is a MEMS device (Col.6, Lns.39-50).

Regarding claim 33, O'Connor et al. disclose that the microfluidic device comprises a plurality of microchannels as shown.

Regarding claim 36, O'Connor et al. disclose that the microfluidic device further comprises one or more sensor chambers (the microfluidic modules) for containing one or more sensors.

Regarding claim 37, O'Connor et al. disclose that the one or more sensor chambers is for containing one or more cells (Col.6, Lns. 2-4).

Regarding claim 38, O'Connor et al. disclose that the microfluidic device

comprises at least one electrical element (141 and Col. 9, Lns. 13-45) for performing planar patch clamp analysis. The limitation "for performing..." is considered as an intended use limitation. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Regarding claim 40, O'Connor et al. disclose that the macroscale device comprises a pump head connectable to a pressurized air supply (Col. 7, Lns. 54-56 disclose that the air channel is compressed therefore there must be some opening which lets the air in, therefore this opening would be considered a head which is connectable to pressurized air supply).

Regarding claim 41, O'Connor disclose that the macroscale surface interfaced with a microscale surface is a surface of a device being a pump (Col. 6, Lns. 39-42) thereby being selected from the group consisting of a pump head, pump, degasser, flow meter, injector manifold, a pressure sensor, flow cell, concentration manifold or cartridges, a fitting or connector, a mixer, a compressor, an ultrasonic bed, an extractor, a focusing device, a dialysis chamber, an absorption chamber, a metabolite chamber, a toxicity chamber, a cell chamber, a detector, an RFID tag, a reagent vessel, a separation column, a focusing column, a size exclusion column, an ion-exchange columns, affinity columns, solid-phase extraction beds, a filter, a sieve, a frit, a depth filter, a heater, a heat exchanger, a cooler, a magnetic field generator, electric field generator, electroporation device, patch clamp pipette, and one or more connections

thereto.

Regarding claim 42, O'Connor et al. disclose that the detector is a fluorescence flow cell (Col. 5, Lns. 56-58) which is selected from the group consisting of a UV/Visible absorbance flow cell, a fluorescence flow cell, a conductivity flow cell, an electrochemical detector, a plasma detector, surface plasmon resonance detector and a mass spectrometry detector.

Regarding claim 43, O'Connor et al. disclose that the detector is an optical sensor such as disclosed in Column 6, lines 42-47, selected from the group consisting of a flow meter, a pressure transducer, a temperature sensor, a chemical sensor, an acoustic sensor, a color sensor, an optical sensor, a bar code sensor, a photothermal sensor, a photoacoustic sensor, and an RFID tag.

O'Connor et al. is silent to the double sided tape forming a stable association between the microscale device and the macroscale device, wherein the double sided tape comprises a first adhesive surface which associates with the macroscale device and a second adhesive surface which associates with the microscale device.

Call et al. disclose a microelectronic device which teaches double sided tape (42) forming a stable association between the microscale device and the macroscale device, wherein the double sided tape comprises a first adhesive surface which associates with the macroscale device and a second adhesive surface which associates with the microscale device.

It would have been obvious to one of ordinary skill in the art at the time of invention to employ the double sided tape forming a stable association between the

microscale device and the macroscale device, wherein the double sided tape comprises a first adhesive surface which associates with the macroscale device and a second adhesive surface which associates with the microscale device of Call et al. into the device of O'Connor et al. in order to directly attach the two devices (Col.2, Lns. 37 - 40).

11. Claims 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Connor et al '477 and Call et al. '256 in view of Pfost (5,104,621).

O'Connor et al. and Call et al. disclose all of the features of the claimed invention although is silent to a system, wherein the microchannels correspond in number to the number of wells in a microtiter plate, and, wherein the microchannels connect to reservoirs in the microfluidic device and wherein the center-to-center distance of each reservoir corresponds to the center-to-center distance of the wells in the microtiter plate.

Pfost et al. disclose an analytical automated chemistry processing center which teaches the use of a microtiter plate (Col. 11, Lns. 45-48).

It would have been obvious to one of ordinary skill in the art at the time of invention to utilize the microtiter plates of Pfost et al. into the system of O'Connor et al. and Call et al. to have a system wherein the microchannels correspond in number to the number of wells in an industry-standard microtiter plate, and, wherein the microchannels connect to reservoirs in the microfluidic device and wherein the center-to-center distance of each reservoir corresponds to the center-to-center distance of the wells in the microtiter plate, in order to have an automated material handling system which could transfer the samples from one well of one microtiter plate to a different well in another

microtiter plate depending on the type of analysis desired (Col. 11, Lns. 45-53).

12. Claims 29,44,45,49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Connor et al. (6,536,477) and Call et al. '256 in view of Crandall et al. (6,352,766).

O'Connor et al. and Call et al. have disclosed all of the features of the claimed invention although is silent to the system having at least one adhesive side of the tape surface is covered by a release liner prior to adhering the device surface of the macroscale or microscale device and adhesives on each side of the double sided tape comprise different types of adhesive and transfer tape forming a stable association between the microscale device and the macroscale device, wherein the transfer tape comprises a backing to which an adhesive surface is seperably attached and wherein a bond between the adhesive and the backing is weaker than a bond between the adhesive and the macroscale or microscale surface (O'Connor et al. disclose using transfer tape, Col.4, Lns. 32-35, but is silent to the tape being between the micro and macro devices).

Crandall et al. disclose a low adhesion material which teaches a device as having at least one adhesive side of the tape surface is covered by a release liner (Col. 5, Lns. 38-41) prior to adhering the device surface of the macroscale or microscale device and adhesives on each side of the double sided tape comprise different types of adhesive (Col. 5, Lns. 41-45).

It would have been obvious to one of ordinary skill in the art at the time of invention to employ to the system having at least one adhesive side of the tape surface

is covered by a release liner prior to adhering the device surface of the macroscale or microscale device and adhesives on each side of the double sided tape comprise different types of adhesive and transfer tape forming a stable association between the microscale device and the macroscale device, wherein the transfer tape comprises a backing to which an adhesive surface is seperably attached and wherein a bond between the adhesive and the backing is weaker than a bond between the adhesive and the macroscale or microscale surface of Crandall et al. onto the device of O'Connor et al. and Call et al. in order to permit the easy removal of the liner from the coated article (Col.1, Lns 21-30).

Regarding claim 50, the device shown by O'Connor et al. in combination with Call et al. and Crandall et al. will perform the methods as recited in claim 50, during normal operational use of the device, the method of making or using the device is inherent in using the apparatus.

13. Claims 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Connor et al. (6,536,477) and Call et al. '256 in view of DiZio et al. (6,455,152).

O'Connor et al. and Call et al. have disclosed all of the features of the claimed invention although is silent to the system having the adhesive on the tape is patterned onto a backing and, wherein at least one surface of the tape comprises portions that are coated with adhesive and portions that are not coated with adhesive.

Dizio et al. disclose an adhesive coating article which teaches the use of the adhesive on the tape is patterned onto a backing and, wherein at least one surface of

the tape comprises portions that are coated with adhesive and portions that are not coated with adhesive (Col. 5, Lns. 39-41).

It would have been obvious to one of ordinary skill in the art at the time of invention to utilize the adhesive on the tape is patterned onto a backing and, wherein at least one surface of the tape comprises portions that are coated with adhesive and portions that are not coated with adhesive of Dizio et al. onto the system of O'Connor et al. and Call et al. in order to reduce the surface contact between the transfer surface and the adhesive (Col. 5, Lns. 9-20) to have a better transfer of adhesive during the manufacturing process when joining the micro and macroscale devices.

Double Patenting

14. Applicant is advised that should claims 28 and 29 be found allowable, claims 48 and 49 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Response to Arguments

15. Applicant's arguments with respect to claims 28-31, 33-38 and 40 - 52 have been considered but are moot in view of the new ground(s) of rejection. Call et al. disclose an apparatus which teaches the use of attaching two devices, macro and micro, together using double sided tape between the two devices.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig Price whose telephone number is (571) 272-2712. The examiner can normally be reached on 7AM - 5:30PM M-R, Increased flex time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Greg Huson can be reached on (571) 272-4887. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CP/ 29 October 2007

JOHN RIVELL
PRIMARY EXAMINER
ART UNIT 347